

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

BUREAU OF AGRICULTURAL CHEMISTRY AND ENGINEERING
UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. 9, No. 7.

WASHINGTON, D.C.

February, 1940.

Agriculture.

Agricultural outlook for South Carolina, 1940. By O. M. Clark and E. H. Rawl. Clemson, S. C., 1939. 15p. Clemson agricultural college. Extension service. Circular no.176.

Farm outlook for 1940. Prepared in the Bureau of agricultural economics. Washington, U.S. Govt.print.off., 1939. 46p. U.S. Department of agriculture. Miscellaneous publication no.379.

Michigan agricultural outlook for 1940. East Lansing, Mich., 1940. 20p. Michigan state college. Agricultural economic news for Michigan. No.23.

Newest south: the South of today and tomorrow presents an unequalled array of assets. By J. E. Stanford. Southern agriculturist. v.70,no.1. January, 1940. p.7. Southern cash farm income in 1937, revised figures show, increased \$393,000,000 above 1936, while cash farm income for balance of country declined more than \$721,000,000. Southern farmer's income from cotton in 1938, exclusive of government payments, was \$479,902,000 which was but 25 per cent of his total income excluding government payments.

Seventy-eighth annual report of the Secretary of the State board of agriculture of the state of Michigan and fifty-second annual report of the Experiment station from July 1, 1938 to June 30, 1939. Lansing, Mich., 1939. 138p.

Air Conditioning.

Air conditioning requirements in modern mushroom houses. By E. B. Lambert. Refrigerating engineering. v.38,no.5. November, 1939. p.289-291. Air conditioning in mushroom culture is not new. Realization of requirements described here has developed as evolutionary process during past 20 years. Two of newer features in this development are vertical circulation of air during sweating-out period, and realization of harmful effect of heating compost over 145°F.

Annual air conditioning review for year 1939. By Margaret Ingels. Ice and refrigeration. v.98,no.1. January, 1940. p.25-26.

Air Conditioning. (Cont'd).

Poultry research aided by air conditioning. By H. G. Barott.
Heating and ventilating. v.36,no.9. September, 1939.
p.23-25. Air conditioning is often extremely useful to
research workers in eliminating variables due to changes in air
conditions which would affect their test results. Recent appli-
cation for this purpose has been in connection with poultry nutri-
tion research work being conducted by U.S. Dept. of agriculture.
Author discusses some of problems faced by workers at the Dept. of
Agriculture's research center at Beltsville, Maryland, tells how
air conditioning had helped them and describes equipment used.

Building Construction.

Charts for concrete column design. By R. B. H. Begg. Blacksburg,
Va., 1939. 19p. Virginia polytechnic institute. Engineer-
ing experiment station series. Bulletin no.40.

Theory of elastic stability applied to structural design. By Leon S.
Moisseiff and Frederick Lienhard. American society of civil
engineers. Proceedings. v.66,no.1. January, 1940.
p.31-70. Theory of elastic stability is study of funda-
mental laws that govern behavior of metals in compression and
application of knowledge derived from such study to design of
structures. Comprehensive understanding of this behavior will
enable engineering profession to establish rules of design in
accordance with fundamental laws and thereby to construct more
dependable as well as more economical structures. Greater freedom
in application of metals will result therefrom. Elements and shapes
in which metals are used for structural members have been studied
and tested individually, as well as in combined forms. Tests of
members subjected to compression have shown that member as whole
will fail by flexure as column, or its component parts will eventu-
ally wrinkle into waves. Stress at which these waves become visible
depends on material, proportions of elements, and structural composi-
tion of member. Elements that have wrinkled into visible waves can
no longer sustain their proportionate share of load and small in-
crease will cause failure.

Wind bracing in steel buildings. Sixth progress report of subcommittee
no.31 Committee on steel of the structural division: discussion.
By Ethan F. Ball. American society of civil engineers. Pro-
ceedings. v.66,no.1. January, 1940. p.115-116.

Building Materials.

Local materials for farm buildings. By H. B. White. University
farm, St. Paul, Minn., 1940. 1p. University of Minnesota.
Agricultural extension division. Agricultural engineering news
letter. No.94.

Stability of sheathing papers as determined by accelerated aging.
By S. G. Weissberg, D. A. Jessup and C. G. Weber. Washington,

Building Materials. (Cont'd).

U.S. Govt.print.off., 1939. 7p. National bureau of standards. Building materials and structures. Report BMS35.

Use and abuse of wood in house construction. By R. P. A. Johnson and E. M. Davis. Washington, D. C., 1939. 24p.
U.S. Department of agriculture. Forest service. Miscellaneous publication no.358.

Channels.

Design of an open-channel control section: discussion. By George E. Barnes and Karl R. Kennison. American society of civil engineers. Proceedings. v.66,no.1. January, 1940. p.143-149.

Lateral spillway channels: discussion. By Thomas R. Camp. American society of civil engineers. Proceedings. v.66,no.1. January, 1940. p.107-111.

Chemicals.

Chemical data sheets. Chemical and metallurgical engineering. v.46,no.9. September, 1939. p.572-595. Presents available statistics for more than 200 important chemical commodities--their production, imports, exports, values, uses, grades and manufacturers.

Synthetic organic chemicals: United States production and sales, 1938. Washington, U.S. Govt.print.off., 1939. 59p. U.S. Tariff commission. Report no.136. (Second series).

Chemistry, Technical.

Threads of revolution. By Joseph L. Nicholson. Forbes. v.44,no.10. November 15, 1939. p.15-17, 37. Nylon--vinyon--fiberglas--lanitol--pc ce-- new names in a new industry that threatens to overturn many an established business.

Compressors.

Air conditioning compressors. Refrigerating engineering. v.38,no.6. December, 1939. p.346-347. Year brings new departures in compressor design for air conditioning uses.

Condensers.

Analysis of condenser operation. By W. H. Motz. Ice and refrigeration. v.97,no.5. November, 1939. p.304-308.
Development of new formula concerning the operating characteristics of refrigerant condensers, such as operating pressures and temperatures, quantities of surfaces and water, heat transfer rates, containing useful tables and charts. Solution of practical problems.

Cotton and Cotton Ginning.

Development of cooperative cotton ginning. By O. W. Herrmann.
Washington, U.S. Govt. print. off., 1939. 68p. Farm credit
administration. Cooperative research and service division.
Circular no. C-112.

Electrical properties of cotton; some references to the literature,
1931 - date. By E. L. Day, comp. Washington, D. C., 1939.
3p. Mimeographed. U.S. Bureau of agricultural economics.
Economic library list no. 7.

Sea island cotton; selected references. By E. L. Day, comp.
Washington, D. C., 1939. 13p. Mimeographed. U.S. Bureau
of agricultural economics. Economic library list no. 8.

Cotton Machinery.

Mechanical harvesting of cotton as affected by varietal characteristics
and other factors. Division of agricultural engineering.
College station, Texas, 1939. 49p. "References": p. 49.
Texas agricultural experiment station. Bulletin no. 580.

Cottonseed.

Cottonseed hulls as an industrial raw material. By D. M. Musser and
R. F. Nickerson. Industrial and engineering chemistry. Indus-
trial edition. v. 31, no. 10. October, 1939. p. 1229-1233.
Production. Chemical composition. Suggested uses.

Dams.

Concrete for Pensacola Dam. By M. G. Fuller. Engineering news-
record. v. 124, no. 5. February 1, 1940. p. 154-158.
Article tells of preparation of four sizes of aggregates, arrange-
ment of mixing plant to obtain flexibility, dispatching of trucks
to proper stations, and concrete placement and formwork.

Engineering geology problems at Conchas Dam, New Mexico: discussion.
By Irving B. Crosby. American society of civil engineers.
Proceedings. v. 66, no. 1. January, 1940. p. 105-106.

Large core drills aid construction at Chickamauga Dam: discussion.
By J. G. Tripp, James B. Hays and O. N. Floyd. American
society of civil engineers. Proceedings. v. 66, no. 1.
January, 1940. p. 112-114.

Rubber waterstops for dams. By C. P. Vetter. Engineering news-
record. v. 124, no. 5. February 1, 1940. p. 159-161.
After several years' investigation, engineers of U.S. Bureau of
Reclamation, working with other manufacturers, have developed
novel rubber waterstop which now is in use in Imperial Dam and
structures of the All-American Canal. Details of seals are given
and results of tests as to their functioning under movement along
joints in which they are inserted. Long life for rubber is expected
under conditions to which waterstops are subjected.

Dryers and Drying.

How to dry efficiently. By A. W. Lissauer. Chemical and metallurgical engineering. v.46,no.9. September, 1939. p.517-518. So many types of dryer are now available that practically any drying problem can be handled efficiently with standard or only slightly modified equipment. Outlines principal types and compares their efficiencies and fields of usefulness.

Earth Pressure.

General wedge theory of earth pressure: discussion. By Howard F. Peckworth. American society of civil engineers. Proceedings. v.66,no.1. January, 1940. p.155-158.

Electricity in the Home.

Electric vacuum cleaners: their selection, use, and care. By R. M. Beard and Thelma Beall. Columbus, Ohio, 1940. 16p. Ohio state university. Agricultural college extension service. Bulletin no.204.

Electricity on the Farm.

Fifteenth annual progress report of investigations of the various uses of electricity for agriculture in the state of Washington. Submitted December 29, 1939, to the Washington Committee on the relation of electricity to agriculture. By L. J. Smith and W. A. Junnila. n.p., 1940? 55p. Processed.

Fourth annual report to Congress, Electric home and farm authority, covering operations from July 1, 1938 to June 30, 1939. Washington, D.C., Electric home and farm authority, 1939. 27p. Mimeographed.

Engineering.

Standards of professional relations and conduct. By Daniel W. Mead. American society of civil engineers. Proceedings. v.66,no.1. January, 1940. p.5-30. Paper is intended to cover, so far as practicable, personal and ethical relations of engineer in all ordinary positions and branches of profession. Paper has been written more particularly for younger men of profession and with hope that it may supply them with some information, usually not available in college, as to what their action and conduct should be in their professional relations in practical life. Principles enunciated are those confirmed by fifty-five years of experience of writer in engineering profession. All are principles that writer believes should not only be acknowledged but actually put into practice in professional service. Their genuine acceptance and practical application would greatly improve standing of entire profession, would add to value of its services, and would greatly strengthen its influence on public opinions. Their application will also accomplish greatest measure of personal success and personal satisfaction.

Engineering. (Cont'd).

Writer first discusses vital relation of good principles and good conduct to success in life and attempts to analyze the various characteristics necessary for professional success. This is followed by a suggested code of courtesy and personal conduct. Then follow suggested codes for ten departments of engineering activity. Writer recognizes fact that this paper does not cover, completely, entire field of engineering. It is believed, however, that careful consideration of these suggested codes will make obvious to the engineer what his course of conduct should be in almost any field not specifically covered. It is not suggested that any such involved code be adopted as official code of Society, but it is hoped that discussion will be sufficiently broad and complete to determine whether or not principles outlined meet approval of profession. From paper and its discussion, it is hoped that unofficial code may be developed sufficiently complete so that any engineer in any ordinary position or in any usual line of work may determine opinion of profession as to proper course of action which should be pursued. Bibliography of Literature on Ethics and Human Engineering is added as Appendix.

Engines.

Some new investigations on old combustion engine problems. By
Ing. G. Eichelberg. Engineering. v.148,no.3853.
November 17, 1939. p.547-550. Part II. Heat flow in
cylinder walls and pistons.

Some new investigations on old combustion engine problems. By
Ing. G. Eichelberg. Engineering. v.148,no.3855.
December 1, 1939. p.603-605. Part III. Temperature
effects.

Erosion.

Saving soil with sod in the Ohio valley region. By Kenneth Welton.
Washington, U.S. Govt.print.off., 1939. 29p. U.S. Depart-
ment of agriculture. Farmers' bulletin no.1836.

Evaporation.

Evaporation index-meter for use in irrigation practice. By J. D. Wilson.
In Bimonthly Bulletin, Ohio agricultural experiment station.
v.35,no.202. January-February, 1940. p.3-6.

Fans.

Are you buying an exhaust system? By F. F. Kravath. Heating
and ventilating. v.36,no.9. September, 1939. p.31-33.
Part 2--What about fans, fan motors and fan drives?

Farm Buildings.

Steeled for the future. Successful farming. v.38,no.2.
February, 1940. p.12. Illustrations of various farm
structures.

Types, rates, and methods of depreciation of farm buildings. By
H. B. Sommerfeld. American society of farm managers and rural
appraisers. Journal. v.3,no.1. April, 1939. p.11-17.

Farm Machinery and Equipment.

Care of machinery in winter. By R. E. Miller. Utah farmer.
v.56,no.11. January 10, 1940. p.9.

Century of progress in farm mechanization. By Harry G. Davis.
Southern planter. 101st year,no.1. January, 1940.
p.10,41.

Figure your costs. By J. E. Bullard. New England homestead.
v.112,no.22. November 18, 1939. p.12-13.
Failure to give machinery the care and attention it needs does
increase costs to a considerable degree.

Harvesting hay and chaff by vacuum. By F. Hal Higgins. Farm
implement news. v.61,no.2. January 25, 1940. p.30.

Modern equipment for vegetable growers. By Alvan C. Thompson.
Market growers journal. v.66,no.1. January 1, 1940.
p.8-11.

Newer tractor cultivators and tillers for 1940. Market growers
journal. v.66,no.1. January 1, 1940. p.4-5,16,22.

Service program for farm equipment. By R. J. Kretz. Implement
and tractor. v.55,no.1. January 6, 1940. p.26-29.

Tools we work with. By L. R. Neel. Southern agriculturist.
v.70,no.1. January, 1940. p.34-35. Agriculture is
becoming mechanized at rapid rate, and smart farmer today is one
who makes best possible use of machinery adapted to his particular
needs.

Farm Shop.

Farm shop a good investment. By G. H. Bliesner. Electricity on
the farm. v.13,no.1. January, 1940. p.11.

Feed Grinders and Grinding.

Feed grinding on the farm; selecting the proper grinder is important.
By C. P. Wagner. Markets: Building section. November 9, 1939.
p.5.

Feed Grinders and Grinding. (Cont'd).

How to do a 20 h.p. feed grinding job with a 1 to 3 h.p. motor.
Electricity on the farm. v.13,no.1. January, 1940.
p.14. Gives cross-section of four-bin arrangement with
hammer mill and blower elevator for grinding, mixing and sacking
or storing.

Fence Posts.

Process for durability. By Philip H. Jones, Jr. New England
homestead. v.112,no.22. November 18, 1939. p.7-8.
Tire-tube treatment simple and cheap forces preservative solution
through sap channels.

Fertilizers.

Commercial fertilizer report for 1939. By J. T. Sparling and Edmund
Burke. Bozeman, Mont., 1939. 13p. Montana state college.
Agricultural experiment station. Bulletin no.376.

Commercial fertilizers: report for 1939. By E. M. Bailey. New
Haven, Conn., 1939. 63p. Connecticut agricultural experi-
ment station. Bulletin no.430.

Fire Protection.

Fire safeguards for the farm. By V. N. Valgren, H. E. Roethe and
M. C. Betts. Washington, U.S. Govt.print.off., 1939.
30p. U.S. Department of agriculture. Farmers' bulletin no.1643.

Get ready to fight fire. By Ferdie Deering. Farmer-stockman.
v.52,no.21. November 1, 1939. p.521.

National fire codes for the prevention of dust explosions, 1940.
Boston, Mass., National fire protection association, 1940. 135p.

Floods and Flood Control.

Transient flood peaks: discussion. By Ivan E. Houk. American
society of civil engineers. Proceedings. v.66,no.1.
January, 1940. p.176-178.

Flow of Water and Gases.

Analysis of flow in networks of pipes. By Ronald James Cornish.
Journal of the institution of civil engineers. v.13,no.2.
December, 1939. p.147-154. Institution of civil engin-
eers. Paper no.5219.

Electric sounding reel for stream flow measurement. By E. H. Curtis
and H. E. Cox. In Engineering experiment station news.
Columbus, Ohio, 1939. v.11,no.5. December, 1939.
p.15-16.

Foods.

Production, purchase, sale, and use of specified foods on Alabama farms. By B. T. Inman. Auburn, Ala., 1939. 31p.
Alabama polytechnic institute. Agricultural experiment station.
Circular no.81.

Foods, Frozen.

Freezing fruits and vegetables in the southwest. By J. L. Heid.
Refrigerating engineering. v.38,no.5. November, 1939.
p.286-288. Advantages of freezing are as follows: (1)
Varieties are selected for color, flavor and texture, and not
because of considerations such as shipping quality. (2) Vege-
tables may be grown where conditions are most favorable, harvested
when at their best, and delivered anywhere at any time in virtu-
ally same condition as when freshly harvested. (3) Proper freezing
methods shorten cooking time, with result that, after cooking,
vegetables retain fresh flavor and color, often excelling that
of best raw vegetables available. (4) Preparation for freezing
includes such operations as cleaning, sorting, grading, peeling,
shelling, coring, slicing, pulping and juicing. Thus bulk and
weight are decreased, making products ready for prompt use.

Railroad service and frozen foods. By Willis R. Woolrich.
Refrigerating engineering. v.38,no.5. November, 1939.
p.277-278.

Foundations.

Field tests of a shale foundation: discussion. By Harry E. Hatch.
American society of civil engineers. Proceedings. v.66,no.1.
January, 1940. p.117-120.

New data on structures and foundations. Engineering news-record.
v.124,no.5. February 1, 1940. p.174-176. From papers
presented at the American society of Civil engineers meeting in
New York two weeks ago it is noted that: Settlement of ground
adjacent to excavations is inevitable but its extent can be re-
duced by proper construction procedure. Settlement under struc-
tures is controllable by balancing structure loads against removal
of overburden. Wind force on tall buildings should be taken as 20
lb. up to 300-ft. height, increasing to 50 lb. at 1,500 ft. Con-
tinuous slabs may be designed satisfactorily by static methods.

Frost Protection.

Frost damage can be prevented. By Eckley S. Ellison. Florida
grower. v.48,no.1--whole no.1106. January, 1940.
p.9,11. Greatest advance in frost protection methods has
come about only during past few years, as result of information
collected by governmental research. Scientific frost protection
measures have been devised which place this work on sound, practical,
and efficient basis. Modern frost protection is economically fea-
sible even though it is expensive. Money spent on this work must

Frost Protection. (Cont'd).

be considered as providing premium payments on necessary form of insurance. Grove heating is the cheapest form of frost insurance that can be had.

Fuels.

Alternative fuels for road transport engines. Indian engineering.
v.106,no.4. October, 1939. p.133-134. Advantage of
producer gas.

Gasoline volatility: its relation to your car's performance.
Lubrication. v.25,no.12. December, 1939. p.133-144.

Liquified gas for the household. By A. H. Senner and H. S. Holbrook.
Washington, U. S. Govt.print.off., 1939. 8p. U.S. Depart-
ment of agriculture. Leaflet no.191.

Heat Transmission.

Survey of the science of heat transmission. By Max Jakob. Lafay-
ette, Ind., 1939. 59p. Purdue University. Engineering
experiment station. Research series no.68.

Hydraulics.

Hydraulics and water works engineering. By H. N. Lendall. American
water works association. Journal. v.31,no.12. December,
1939. p.2073-2084. Part 2. Friction losses in pipe
lines.

Relation of the statistical theory of turbulence to hydraulics: dis-
cussion. By Hunter Rouse. American society of civil engineers.
Proceedings. v.66,no.1. January, 1940. p.165-166.

Hydrology.

Hydrology of the Great Lakes, a symposium: discussion. By G. E. Hickox,
C. R. Pettis, and Harold C. Hickman. American society of civil
engineers. Proceedings. v.66,no.1. January, 1940.
p.131-142.

Unit hydrograph principle applied to small water-sheds: discussion.
By Franklin F. Snyder. American society of civil engineers.
Proceedings. v.66,no.1. January, 1940. p.150-152.

Insulation.

Thermal insulation for air conditioning. By J. F. Stone. Power
plant engineering. v.43,no.11. November, 1939. p.743-744.
Insulation is an important item on air conditioning jobs. It must
be sufficiently thick to accomplish the desired result, have the
proper characteristics for the application and be installed correctly.

Leather.

Air burn control in drying heavy leather. By J. W. Moore and F. C. Vilbrandt. Blacksburg, Va., 1939. 28p. "Literature cited": p.26. Virginia polytechnic institute. Engineering experiment station series no.41.

Lubrication.

Motor oiling chart. Electricity on the farm. v.13,no.1.
January, 1940. p.15.

Viscosity-pressure characteristics of lubricating oils. By B. W. Thomas, W. R. Ham and R. B. Dow. Industrial and engineering chemistry. Industrial edition. v.31,no.10. October, 1939. p.1267-1270. Previous investigations have shown that pressure coefficient of viscosity of lubricating oils depends to high degree upon nature of crude from which oil was refined. Study of viscosity-pressure characteristics of oils is being continued for fractions of oils in cooperation with The Petroleum Refining Laboratory of this college in order to investigate these interesting effects in greater detail.

Milk Houses.

Farm milk house. By A. J. Bell and J. M. Jensen. East Lansing, Mich., 1940. 11p. Michigan state college. Extension division. Extension bulletin no.206.

Miscellaneous.

Annual report of the Secretary of the Interior for the fiscal year ending June 30, 1939. Washington, U.S. Govt.print.off., 1939. 458p.

Biennial census of manufactures, 1937. Part 1. U.S. Bureau of the Census. Washington, U.S. Govt.print.off., 1939. 1674p.

List of the books, bulletins, journal contributions, and patents by members of Mellon Institute, 1911-1938. Pittsburgh, Pennsylvania, 1939. 242p. Mellon Institute. Bibliographic series. Bulletin no.4.

Progress report, 1939; statement of the Advisory committee. National resources committee. Washington, U.S. Govt.print.off., 1939. 173p.

Reconstruction of the ice skating rink at the University of Illinois. By John Doak. Reprint from Journal of the American concrete institute. September, 1939. 20p.

Report of the Chief of Engineers, U.S. Army, 1939. Washington, U.S. Govt.print.off., 1939. 2 parts in 3 vols.

Miscellaneous. (Cont'd).

Report of the Chief of the Bureau of agricultural chemistry and engineering, 1939. By H. G. Knight. Washington, D.C., U.S. Govt. print. off., 1940. 98p.

Motors, Electric.

Discussion on feed grinding continued; Wagner describes use of 7 or 10 Hp. motors. By C. P. Wagner. Markets. Building section. December 28, 1939. p.5,8. Part 5. Describes use of 7-1/2 or 10 hp. motors.

Electric motors. By H. P. Richter. Electricity on the farm. v.13,no.1. January, 1940. p.13,25. Article 2. Overloading and protecting motors--types of motors: split phase and capacitor.

Small motor design progress for the refrigeration industry. By Martin Schiff. Refrigerating engineering. v.38,no.6. December, 1939. p.376-377.

Use of motors for handling and processing farm feeds. By R. R. Parks. Rural electrification news. v.5,no.4. December, 1939. p.20-21,30-31.

Peanuts.

Peanut industry; selected list of references on the economic aspects of the industry, 1920-1939. By H. E. Hennefrund, comp. Washington, D. C., 1939. 238p. Mimeographed. U.S. Bureau of agricultural economics. Agricultural economics bibliography no.80.

Pest Control.

Insect damage to stored grain. South Australia. Department of agriculture. Journal. v.43,no.4. November, 1939. p.275. Discussion of various types of silos.

Termite damage: preventives and remedies. By W. J. Baerg. Fayetteville, Ark., 1940. 27p. University of Arkansas. Agricultural experiment station. Bulletin no.385.

Poultry Houses and Equipment.

Feeding and management of laying hens. By Stanley Caton, W. M. Insko, Jr. and A. T. Ringrose. Lexington, Ky., 1939. 22p. University of Kentucky. College of agriculture. Extension division. Circular no.237, revised.

Gable type chicken houses. By Allan A. McArdle. South Australia. Department of agriculture. Journal. v.43,no.4. November, 1939. p.323-325. Description of type of house

Poultry Houses and Equipment. (Cont'd).

used and methods of handling employed from this period until the time when pullets are ready to be moved to laying quarters.

Portable cold brooders. By Allan A. McArdle. South Australia.
Department of agriculture. Journal. v.43,no.3.
October, 1939. p.209-211. Procedure adopted at Parafield
Poultry experiment station from three weeks to the age of 6-7
weeks are described.

Precooling.

Precooling tests of Indiana strawberries, cantaloupes, and peaches.
By T. E. Hienton and K. I. Fawcett. Lafayette, Ind., 1939.
36p. "Literature cited": p.36. Purdue university. Agri-
cultural experiment station. Bulletin no.439.

Production Costs.

Cost and efficiency in producing hops in Oregon. By G. W. Kuhlman
and R. E. Fore. Corvallis, Oreg., 1939. 57p.
Oregon state college. Agricultural experiment station. Bulletin
no.364.

Pumps and Pumping.

Cost of pumping for irrigation: report of the Kansas State board of
agriculture, December, 1939. Topeka, Kans., W. C. Austin,
1939. 55p.

Simple method of testing centrifugal pumps. By Homer E. Beckwith.
American water works association. Journal. v.31,no.12.
December, 1939. p.2098-2108.

Rainfall and Runoff.

Frequency and seasonal distribution of erosive rains in Ohio.
By H. L. Borst, Russell Woodburn, and L. D. Bayer. In Bimonthly
bulletin, Ohio agricultural experiment station. v.35,no.202.
January-February, 1940. p.15-21.

Hydrologic studies: compilation of rainfall and run off from the
watersheds of the North Appalachian conservation experiment sta-
tion, Zanesville, Ohio, 1933-38. By H. L. Borst and Russell Wood-
burn. Washington, D. C., U.S. Soil conservation service, 1939.
25p. Processed.

Reclamation.

Bureau of reclamation. In Annual report of the Secretary of the
Interior for the fiscal year ending June 30, 1939. Washington,
U.S. Govt.print.off., 1939. p.194-231.

Refrigerants.

Dry-ice as a transport refrigerant. By N. E. MacLean. Ice and refrigeration. v.97,no.5. November, 1939. p.309-311. Has many advantages as compared to other forms of refrigeration. Results of experiments on marine shipments. Its future as refrigerant for railroad shipments.

Eutectic salt ice. By Arthur Adams. Refrigerating engineering. v.38,no.5. November, 1939. p.279-282. Eutectic salt ice is solid refrigerant produced through quick freezing of eutectic sodium chloride brine on FlakIce machine. Solution of any salt in water has certain concentration at which freezing point is lowest. Solution of this concentration is called eutectic and temperature at which it freezes is eutectic temperature. Eutectic brine from which ice is manufactured consists of 23.3 per cent of sodium chloride and 76.7 per cent of water by weight. Frozen brine ribbons emerge from FlakIce machine in same form and have same general appearance as frozen water ribbons. Similar methods for handling are used. Principal differences between eutectic salt ice and frozen water ribbons are as follows: a. Initial liquid is sodium chloride brine instead of water. b. Its freezing temperature is-- 6°F . c. Temperature of freezing medium (calcium chloride brine) is-- 40°F . to-- 20°F . instead of 5°F . to 15°F . for water. d. Temperature of air in standard eutectic salt ice storage bin should be-- 15°F . to-- 10°F . instead of 22°F . to 25°F . for frozen water ribbons.

Refrigeration storage for handling peak loads. By Carl F. Booster. Refrigerating engineering. v.38,no.5. November, 1939. p.283-284,316,318. Discussion deals primarily with equipment used for, and method pertaining to, accumulation of refrigeration and storing of it.

Refrigeration.

Anemostat in commercial refrigeration. By F. J. Kurth. Ice and refrigeration. v.97,no.6. December, 1939. p.447. Extensive tests conducted over period of nearly two years indicated that Anemostat high velocity air diffuser was ideally suited to air handling in walk-in refrigerators and larger commercial and industrial refrigeration systems. By this method coils could be located outside box, resulting in no limitation being placed upon coil size, and space requirements were not consideration in design.

Humidity in refrigeration. Refrigerating engineering: application data. v.38,no.5. November, 1939. p.1-5.

Mixtures of air and vapor at temperatures below freezing. By C. D. Shields. Refrigerating engineering. v.38,no.5. November, 1939. p.293-297. Due to lack of agreement among various engineers it is opportune to consider psychrometric phenomena relating to air-vapor mixtures at low temperatures. There are certain fallacies in now accepted standards that should be pointed out to those who have not made thorough study of subject. This discussion is not attempt to solve problem as it now exists but to clarify it.

Refrigeration. (Cont'd).

Use of refrigerator cars for cooling farm products. Ice and
refrigeration. v.97,no.5. November, 1939. p.330.
Gives some cost figures.

Refrigeration on Cars, Trucks, etc.

Transportation of quick frozen foods. By Harry T. Whyte.
Refrigerating engineering. v.38,no.5. November, 1939.
p.274-276. Important development in refrigerated rail
transport is described.

Refrigerator Lockers.

Organizing a refrigerated food locker association. By L. B. Mann.
Washington, D. C., 1939. 29p. Processed. Farm credit admin-
istration. Cooperative research and service division. Miscellaneous
report no.20.

Polar chest locker system. By E. C. Lloyd. Refrigerating engin-
eering. v.38,no.5. November, 1939. p.308-309.
System described is development of past two years based on ten-
dency of locker plants to go into retail outlets. It is designed
to supplement conventional locker plant.

Refrigerators.

Commercial refrigeration control systems. By A. L. Hesselschwerdt
and A. B. Newton. Refrigerating engineering. v.38,no.6.
December, 1939. p.357-361,382. For many years commer-
cial refrigeration industry has been controlling conditions in
refrigerated cases and walk-in boxes by low-pressure controls,
temperature controls, or combinations of them involving separate
switching functions for temperature and low-pressure devices.
Several years ago it became quite evident that these methods of
control did not secure constant conditions necessary to proper
storage of meat and other produce. Therefore, extensive field
research was undertaken to determine actual requirements of control
system to secure best possible operation of refrigerating system
under range of load conditions usually experienced.

About year ago first system of control developed as result of
these researches was announced. Large number of these systems
have now been installed and given excellent results, but it was
felt that unbiased laboratory tests would be desirable. Such
series of tests was undertaken in cooperation with mechanical
engineering department of Wayne Univ. in July, 1938. Purpose of
this article to summarize results.

Refrigeration service charts. Refrigerating engineering: applica-
tion data. Section 8. v.38,no.6. December, 1939.
p.1-11. Outlines method of locating cause of operating
troubles in commercial and domestic refrigerating equipment.

Research.

Chemical progress and achievements. Chemical and metallurgical engineering. v.46,no.9. September, 1939. p.546-551. Discusses research as catalyst that helps chemical industry create new products, new services and new jobs--all of which contribute to the national welfare.

Growth of research. By George Perazich and Philip M. Field. Chemical and metallurgical engineering. v.46,no.9. September, 1939. p.523-525. Everyone connected with chemical process industries knows that research has grown in the last ten years. Discusses how much it has grown, what type of personnel predominates and where industrial research is done.

How research has helped the Pacific H.W. industry. [Part 1]. By H. G. Knight. Western frozen foods. v.1,no.3. January, 1940. p.46-47.

Rubber.

Rubber industry, 1839-1939. By W. A. Gibbons. Industrial and engineering chemistry. Industrial edition. v.31,no.10. October, 1939. p.1199-1208.

Sewage Irrigation.

Regulations for use of sewage for irrigation. Public works. v.70,no.9. September, 1939. p.28.

Sewage irrigation. California cultivator. v.86,no.22. November 4, 1939. p.599,615.

Soils.

Composition, rating, and conservation of Willamette valley soils. By W. L. Powers, J. S. Jones and C. V. Ruzek. Corvallis, Oreg., 1939. 38p. "References": p.37-38. Oregon state college. Agricultural experiment station. Bulletin no.365.

Solar Heat.

M.I.T. investigates domestic use of solar heat. Architectural record. v.87,no.1. January, 1940. p.48. In small, houselike experimental laboratory, Mass. Institute of Technology engineers have begun investigations into possibilities of using solar radiation as heat source for winter house heating, summer air conditioning, and power generation. Research is being conducted by committee under chairmanship of Associate Professor Hoyt C. Hottel of Dept. of Chemical Engineering.

Soybeans.

Soybean production in Kansas. By J. W. Zahnley. Manhattan, Kans., 1939. 28p. Kansas state college of agriculture. Agricultural experiment station. Bulletin no.282.

Surveying.

An improved method for adjusting level and traverse surveys: discussion. By George H. Dell and Howard S. Rappleye.
American society of civil engineers. Proceedings. v.66,no.1.
January, 1940. p.159-164.

Swine Houses and Equipment.

Equipment for swine production. By E. M. Anderson and V. R. Hillman.
Manhattan, Kans., 1939. 45p. Kansas state college. Agricultural experiment station. Bulletin no.286. (Bulletin no.243, revised).

Home-made hog equipment. By J. W. Schwab and G. O. Hill.
Lafayette, Ind., 1939. 8p. Purdue university. Cooperative extension work in agriculture and home economics. Extension bulletin no.199.

Pigs is pigs: and it is cheaper and more profitable to save them with an electric pig brooder than to raise more with an extra sow. By J. P. Schaenzler. Electricity on the farm. v.13,no.1.
January, 1940. p.6-8.

Tires.

Pioneering on rubber tires. By J. E. Stanford. Southern agriculturist. v.69,no.12. December, 1939. p.7.

Tobacco.

Tobacco laboratory at University of Kentucky air conditioned by Kolvinator. Refrigerating engineering. v.38,no.6.
December, 1939. p.356.

Tractors.

Another new day for tractors. By Clarence Roberts. Farmer-stockman. v.52,no.20. October 15, 1939. p.497.

Charcoal gas units for tractors. Agricultural gazette of New South Wales. v.50,no.11. November 1, 1939. p.590.
More than ordinary skill and very best of materials are required to construct suitable producer gas unit, and consequently Department is not prepared to encourage construction of home-made units. Some slight saving might be effected, but almost always at expense of efficiency. Very efficient units for production of charcoal, or producer, gas are now manufactured for sale to tractor owners. These have been found to be efficient and considerably reduce running expenses.

Costs of tractor logging in Southern pine. By R. E. Worthington. Washington, U.S. Govt.print.off., 1939. 64p. U.S. Department of agriculture. Technical bulletin no.700.

Tractors. (Cont'd).

1915 tractor plus 25 years. Successful farming. v.38,no.2.
February, 1940. p.10. Illustrations.

Turbines.

Trend in hydraulic turbine practice, a symposium: discussion. By
W. S. Pardoe and Donald H. Mattern. American society of civil
engineers. Proceedings. v.66,no.1. January, 1940.
p.179-184.

Walls.

Structural properties of "Insulite" wall and "Insulite" partition
constructions sponsored by the Insulite co. By H. L. Whittemore
and A. H. Stang. Washington, U.S. Govt.print.off., 1939.
52p. U.S. National bureau of standards. Building materials
and structures. Report BMS 31.

Water Supply, Rural.

Low cost kitchen water system. By K. B. Huff. Columbia, Mo.,
1940. 4p. University of Missouri. Agricultural extension
service. Circular no.411.

Weeds.

Cheaper weed control. By M. N. Beeler. Capper's farmer.
v.51,no.1. January, 1940. p.7.

Control of weeds: a review. Agricultural gazette of New South
Wales. v.50,no.11. November, 1939. p.589-590.

Johnson grass troublesome on Lucerne Flats: eradication and control
methods. By C. Walkden Brown. Agricultural gazette of New
South Wales. v.50,no.11. November 1, 1939. p.595-598,
603.

Milky Lobelia: a native weed becoming troublesome. By Joyce W.
Vickery. Agricultural gazette of New South Wales.
v.50,no.11. November 1, 1939. p.591-593.